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## About the cover

*The Greyhounds of the Comte de Choiseul* was painted by Gustave Courbet (1819–1877) in 1866. As a young man, Courbet traveled to Paris to study painting; however, there he shunned formal training to teach himself the rudiments of painting by studying the works of Spanish, Flemish, and French masters. Courbet always regarded himself as a pupil of nature, and eventually was known as a leader of The Realist School. His artistic aims were to reflect the manners, the ideas, and the appearance of his period. Once Courbet had made a name for himself, primarily through his portraits and forest scenes, he turned to promote democratic and social sciences. He was imprisoned for 6 months for his alleged destruction of the Column in Place Vendôme. He later fled to Switzerland, where he died.

Permission to reproduce *Greyhounds of the Comte de Choiseul*, a 35in × 46in oil-on-canvas, was granted by The Saint Louis Art Museum (Gift of Mrs. Mark Steinberg) where the painting is on display.

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**June 15**

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**Serodiagnosis of equine monocytic ehrlichiosis in selected groups of horses in Minnesota (T. W. J. Olchowy et al)**

# National Animal Poison Information Network (NAPINet): Veterinary medicine's new dimension in human-animal service

W. B. Buck, DVM, MS; L.-M. Côté, MS, PhD; H. L. Trammel, PharmD

Early intervention in cases of animal exposure to chemicals and toxins not only saves animal lives and prevents residues in human food supplies, but also helps to reduce emotional distress and financial loss incurred by animal owners. Providing a network for telephone assistance and rapid response field investigations to facilitate successful early intervention brings another dimension to clinical and diagnostic veterinary toxicology. This new dimension also involves computer-assisted compilation of telephone-oriented assessments of history and clinical findings, enabling recognition of emerging and continuing toxic hazards in the environment.

Since the 1950s, telephone assistance has been a mainstay in the management of potential poisonings. Parents and physicians turn to the local poison control center for consultation and recommendations. Likewise, animal owners often seek telephone assistance for toxicologic problems when the veterinary clinic they usually use is closed.[1] When presented with a poisoning problem, many veterinary practitioners and animal owners call their local human poison control center, unaware that animal poison information centers at the Universities of Illinois and Georgia provide nationwide coverage. Although the human poison control centers can provide certain basic information, the staff of these centers seldom has the expertise to adequately recommend specific management and treatment procedures for the various species of domestic and wild animals.

The expert consultation provided by the animal poison information centers for early intervention strengthens the relationship between veterinarians and animal owners in several ways: enables owners to intervene early and prevent additional losses; encourages owners to more carefully observe their animals, and in so doing, monitor for possible environmental contamination; and prepares livestock owners to act quickly when uncommon signs of disease appear in their herds to minimize losses or contamination of meat, milk, and eggs. Furthermore, positive interactions between veterinarians and animal owners enhance the bond between the owner and his/her animal(s). Owners learn to view their pets as life savers, because the monitoring of their behavior can warn of potentially harmful chemicals and toxins. This perspective gives owners power to prevent poisoning and to intervene early if poisoning occurs, provided they have access to expert assistance. Through the process of strengthening the human-animal bond, the veterinarian becomes directly involved in human welfare.

From the NAPINet Association, 2004 S Wright, Urbana, IL 61801 (Buck), the Illinois Animal Poison Information Center, College of Veterinary Medicine, University of Illinois, 2001 S Lincoln, Urbana, IL 61801 (Buck, Trammel), and Consul-Tox Inc, RR 2, Box 14, Tolono, IL 61880 (Côté).

## History of the National Animal Poison Information Network (NAPINet)

In 1978, the College of Veterinary Medicine at the University of Illinois, decided to implement a toxicology training program. Faculty members were receiving a number of requests from practicing veterinarians and animal owners for telephone consultation regarding poisoning and chemical contamination of livestock and pets. As the number of calls increased, veterinarians in postdoctoral training became involved on a rotating, around-the-clock basis. The Animal Toxicology Hotline was born. Soon, this service evolved into a complex structure, consisting of not only telephone consultation, but also field investigation capabilities and diagnostic laboratory support. Eventually, it unfolded into an animal poison information center providing all these services, along with a computerized case record data base, now known as the Illinois Animal Poison Information Center (IAPIC).

For 11 years, the IAPIC has strived to meet the needs of poisoned and chemically exposed animals through a philosophy of integrated service, education, and research. The IAPIC has provided animal toxicologic consultation, trained veterinarians, veterinary students, and graduate students in toxicology, and has conducted basic and applied research. Although the IAPIC was initially oriented toward users in the state of Illinois, the necessity of its services was soon recognized nationally, as well as in Canada and Europe. Altruistically, the IAPIC at-

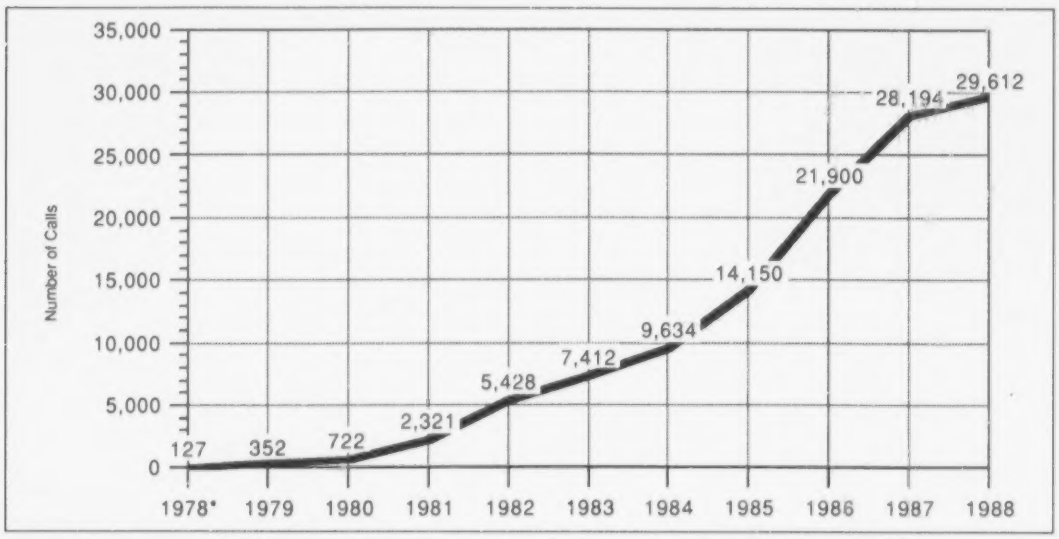


*Figure 1—Illinois Animal Poison Information Center call volume from 1978 (*3 months) through 1988.*

tempted to meet the national needs, but found itself continually pulled away from its original Illinois focus. By 1988, the center was handling nearly 30,000 calls annually (Fig 1), only 12% of which originated from Illinois.

Because the volume of calls surpassed the capacity of the service, resulting in constantly busy telephone lines, in 1987 the IAPIC began to work collaboratively with other strategically located veterinary toxicology groups to form a network of regional animal poison information centers. The existing resources in experienced veterinary toxicology groups could not only relieve the crowded IAPIC telephone lines, but could provide more efficient coverage of the United States and Canada, especially in conducting emergency investigations and handling local or regional problems. Thus, the NAPINet concept was developed.

Conceptually, the NAPINet is a network of autonomous regional animal poison information centers that has the NAPINet Association as its administrative and functional arm. To provide equal representation and power of decision, each regional center member is represented on the NAPINet governing board.

Reasons for networking include: operation with standardized protocols; involvement of existing animal toxicology groups within a unified structure; and provision of quality service, with more efficient use of financial and human resources. Although many toxicology groups in the United States and Canada provide information over the phone, the data are not computerized to be used as monitoring and learning tools. Unifying operational procedures assures the same quality and philosophy of services among centers. The resulting benefit of networking is the development of a substantial case record data base allowing scientists to study trends and problems associated with chemicals or natural contaminants.

**Membership and finances**

An early purpose of the NAPINet Association included the raising of funds to assist in the development and operation of regional centers. The Geraldine R. Dodge Foundation contributed $150,000 from 1987 to 1989, to facilitate the organization of the Association, publication of the *NAPINet Report*, and to assist in the development of new regional centers. During this 3-year period, only the Georgia regional center became operational; however, several other universities are investigating the feasibility of such a program. On the basis of experience at the Illinois center, an estimated $500,000 annually is required for a fully operational center. Unfortunately, the necessary funding for establishing the optimal 10 centers has not been forthcoming.

Membership in the NAPINet Association is open to practicing veterinarians, animal hospitals and clinics, animal owners, manufacturers, and others. Initially, the Association assumed the financial responsibility for a 24-hour, toll-free telephone number for the benefit of members only. Membership fees were used to meet the costs of telephone consultations, which necessitated annual fees ranging up to $250 for animal hospitals and clinics. Because of the exorbitant costs associated with routing the calls, this approach was abandoned in October 1989. Currently, the toll-free numbers are the responsibility of the Georgia Center (which charges telephone users on a subscription basis) and the Illinois Center (recently established a per-case charge). Therefore, membership in the NAPINet Association will not be linked with access to a regional center toll-free telephone number.

Benefits to members of the NAPINet Association now include provision of a membership certificate and a subscription to the *NAPINet Report* for an annual fee of $15. Sustaining manufacturer-members are also provided access to generic case data compiled on the central computer, which may assist in strategic development of safe products. Manufacturer-members are also given priority for field investigations of alleged problems involving their products in animals.

**Objectives of the NAPINet**

*Facilitate the development of regional animal poison information centers and support their activities*—The NAPINet regional centers are expected to provide services similar to that of the IAPIC: telephone consultation, diagnostic laboratory support, and field investigations. The contribution of toxicologists in the various regional centers will increase the effectiveness of all aspects of service, especially field investigations, because of their knowledge about the peculiarities of their region (eg, toxic plants, mineral status of soils, zootoxins, livestock production).

The NAPINet Association provides information about the needs and requirements for regional center status; assists in planning, organizing, and obtaining funds; and provides training and assistance in setting up operational procedures, especially as they relate to information handling and retrieval. In 1989, the NAPINet Association adopted criteria for regional center developmental phases.[a] Each NAPINet-certified regional center will have formal arrangements for analytical toxicologic support with a veterinary diagnostic laboratory that is certified by the American Association of Veterinary Laboratory Diagnosticians and ideally will be associated with such a veterinary diagnostic laboratory. The developmental phases include: preparatory, animal poison information center that plans to develop into a fully operational regional animal poison information center within 5 years; provisional, center that will develop into a fully operational center within 3 years; and regional (fully operational) center. An experienced veterinary poison information specialist will be in the preparatory center 8 hours/day, 365 days/year; in the provisional center, 16 hours/day; and in the fully operational center, around-the-clock. Regional centers in all developmental phases must be directed by a highly experienced clinical/diagnostic veterinary toxicologist. The regional center is expected to maintain adequate informational resources such as toxicology references, a computerized poison index,[b] and reprints of scientific papers.

[a]Copies of which are available from the NAPINet Association, 2004 S Wright St, Urbana, IL 61801; telephone (217)244-7732.

[b]POISINDEX, Micromedex Inc, 600 Grant St, Denver, CO 80203.

Support by the NAPINet for the computerized operations entails standardization and consolidation of data collection, computer programming, storage of case data, and preparation of computer-generated reports. Data base programming, software, and other materials needed to facilitate the networking of the regional centers with a central computer are also part of the NAPINet efforts. A regional center should have computer capabilities compatible with other network centers to insure proper data transfer to the central computer.

*Facilitate education and training at all levels of veterinary toxicology*—Training clinical veterinary toxicologists will be a major function of NAPINet-certified regional centers. The Illinois center alone has awarded over 50 residency certificates and graduate degrees in toxicology. Each regional center will likely be located in a veterinary college that offers postgraduate degrees in toxicology. Structured on-the-job training has proven to be a fast and effective way to learn. Being able to assess the history and description of clinical signs of disease in exposed or poisoned live animals by telephone, then suggesting management and therapeutic measures to prevent or ameliorate the problem is a new dimension for clinical toxicology. Through these activities, a network of NAPINet regional centers will provide for training of clinical toxicologists to address this new dimension.

*Improve the competence of veterinary practitioners, toxicologists, and other scientists*—The NAPINet will also direct its educational focus on those who use the regional center services, informing them about potential hazards of chemicals and toxins not only to animals, but also regarding their public health and environmental aspects. Practicing veterinarians are faced daily with new problems ranging from poisoning of pets to chemical residues in livestock. Their need to obtain strategies to solve such problems is fulfilled by accessing the services offered by the NAPINet centers. In so doing, their need to know stimulates the continuing education process. Symposia for practitioners will be organized as a conventional continuing education vehicle for updating them on the basics of diagnosis and treatment. In addition, symposia and workshops will be organized to train regional center professionals, as well as other scientists who are interested in epidemiologic toxicology.

*Provide professional communication via technical publications and scientific meetings*—The *NAPINet Report*, the official publication of the association, provides information on occurrence, prevention, and management of poisoning and chemical exposure problems in animals. The subjects reflect cases encountered by the regional centers, viewed through the computerized epidemiologic window. In addition, the generic data

collated by the NAPINet regional centers will be made available in the form of annual and periodic reports to private industry, governmental agencies, and other interested parties.

*Encourage the advancement of technology and research in clinical veterinary toxicology and related areas*—The NAPINet Association plans to provide assistance for quality assurance of the data generated by the regional centers, including development of standard formats and software for compiling case-data and implementing a system for scientific review and updating of toxicologic information.

Information relating to each case handled by the NAPINet regional centers will first be entered on the regional center computer and regularly sent to the NAPINet Association to be compiled on the central computer. The data base is a multi-table, relational model and permits searches for a wide range of information. Data include demographic information; animal information (species, breed, age, sex, and number exposed, affected, and dead); agent information (trade name, generic agents); exposure information (assurance, source, location, time, and route and amount of exposure); clinical signs of illness; and assessment of whether the problem was a toxicosis, suspected or doubtful toxicosis, or exposure without apparent effect.

The NAPINet regional centers will have opportunities to conduct research initiated from practical problems first encountered through their telephone service. For example, the IAPIC computer alone contains over 160,000 cases, probably the largest pool of data on spontaneous poisoning problems in animals. The resulting epidemiologic research by the NAPINet centers will involve the development of a scientific approach for predicting risks to human health and the environment from spontaneous animal exposure data. Studying incidents of spontaneous animal exposure is an acceptable alternative to animal experimentation. Useful and traditionally costly information may be gained without purposefully dosing animals. Moreover, comparison of data from human poison centers with that of NAPINet centers will enable recognition of situations in which animals do or do not serve as reliable predictors of human health hazards.

Not only can these data be used to identify potential problems in animals and human health, they also can be good indicators of product market trends. Such data are of value to manufacturers interested in the development of safe products. The continuous nature of regional center data collection provides a means for rapidly and sensitively detecting the emergence of new problem formulations into the marketplace or natural toxins in the environment.

In conclusion, a vast number of commercial products and natural contaminants pose potential hazards to livestock, pets, and exotic animals. When an emergency occurs, the rapidity and quality of the response for early intervention is critical. With the limited financial, physical, and human resources at our disposal, it has become obvious that a single center cannot adequately address the increasing demand for the services, either via telephone or field investigations. To minimize animal suffering and health and economic problems associated with chemical hazards, and to use the expertise available throughout the United States and Canada, the veterinary profession, animal industry, and pet-owning public must pursue the common goal of establishing a network of regional animal poison information centers.

## Reference

1. Trammel HL, Dorman DC, Beasley VR, et al. *Ninth annual report of the Illinois Animal Poison Information Center*. Vol I and II. Dubuque, Iowa: Kendall/Hunt Publishing Co. 1989;486.